

- 25 At the start of the spring, it was estimated that 2637 fish were in the lake. At the end of the winter, a new survey was taken, and it was estimated that 3335 fish were in the lake. What is the percent increase in the population to the nearest percent?

- 27 You want to glue a border along the edges of a pennant that has sides measuring 45 cm, 45 cm, and 30 cm. Find the length of border needed.

- 29 Find the length of baseboard molding needed to edge the bottom of the walls of a square room that is 13 feet long.

- 26 How many square feet of tile are needed to cover a kitchen floor that is 16 feet long by 11 feet wide?

- 28 A circular carpet has a diameter of 7 feet. What is the area of the carpet? Round to the nearest tenth.

Multiple Choice Questions

- 30 What is the volume of a rectangular prism with length 10.5 inches, width 7 inches, and height 4.2 inches?

a. 21.7 cubic inches
c. 102.9 cubic inches

b. 73.5 cubic inches
d. 308.7 cubic inches

$$\begin{aligned} V(\text{rectangular prism}) &= LWH \\ &= (10.5 \text{ in})(7 \text{ in})(4.2 \text{ in}) \\ &= 308.7 \text{ in}^3 \end{aligned}$$

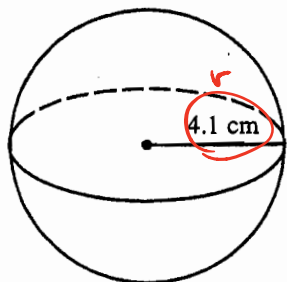
- 31 The radius of the base of a cone is 6 inches. The height of the cone is 7 inches. What is the volume of the cone, to the nearest hundredth?

a. 43.98 cubic inches
c. 263.89 cubic inches

b. 131.95 cubic inches
d. 791.68 cubic inches

$$\begin{aligned} V(\text{cone}) &= \frac{1}{3} B H \\ B &= \pi r^2 = \pi (6 \text{ in})^2 = 36\pi \text{ in}^2 \\ V &= \frac{1}{3} B H = \frac{1}{3} (36\pi \text{ in}^2)(7 \text{ in}) \\ &= 84\pi \text{ in}^3 \\ &= 263.89 \text{ in}^3 \end{aligned}$$

- 32 Find the volume of the sphere. Use $3.14 = \pi$.



$$V(\text{sphere}) = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \pi (4.1 \text{ cm})^3 = 91.8946 \pi \text{ cm}^3$$

$$= \frac{4}{3} (3.14) (4.1^3) = 91.8946 (3.14) \text{ cm}^3$$

$$= 288.55 \text{ cm}^3$$

$$\xrightarrow{\text{round}} 289 \text{ cm}^3$$

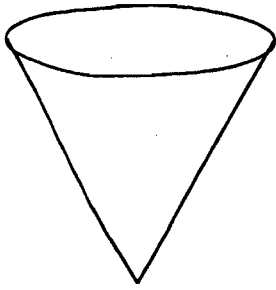
A. 162 cm³

B. 70 cm³

C. 302 cm³

D. 289 cm³

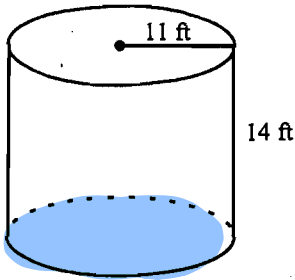
33 What is the name of the solid shown below?



- A. sphere B. cone C. cylinder D. triangular pyramid

area of base (of cylinder)

34 Find the volume of the cylinder. Use $3.14 = \pi$.



$$V(\text{cylinder}) = BH$$

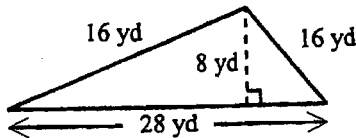
$$B(\text{circle}) = \pi r^2 = (3.14)(11\text{ ft})^2 = 379.94\text{ ft}^2$$

$$V = BH = (379.94\text{ ft}^2)(14\text{ ft}) \\ = 5319.16\text{ ft}^3$$

- A. 6769.84 ft³ B. 5319.16 ft³ C. 1694 ft³ D. 483.56 ft³

length of base (of triangle)

35 Find the area.



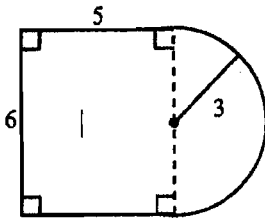
$$A(\text{triangle}) = \frac{1}{2}BH$$

$$= \frac{1}{2}(28\text{ yd})(8\text{ yd})$$

$$= 112\text{ yd}^2$$

- A. 112 yd² B. 224 yd² C. 24 yd² D. 128 yd²

36 Find the area of the figure. Dimensions are in meters. Use $3.14 = \pi$.



$$\text{Area}(\text{rectangle}) = LW = (6\text{ m})(5\text{ m}) = 30\text{ m}^2$$

$$\text{Area}(\text{semicircle}) = \frac{1}{2}\pi r^2 = \frac{1}{2}(3.14)(3\text{ m})^2 \\ = 14.13\text{ m}^2$$

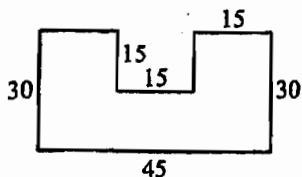
- A. 44.13 m² B. 34.71 m² C. 58.26 m² D. 28.26 m²

$$\text{Area}(\text{figure}) = 30\text{ m}^2 + 14.13\text{ m}^2 = 44.13\text{ m}^2$$

37 The length of a rectangular carpet is 6 feet more than its width. If the area of the carpet is 91 square feet, find its length.

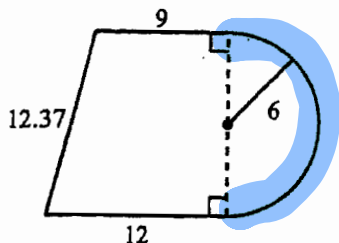
- A. 13 ft B. 15 ft C. 7 ft D. 12 ft

38 Find the perimeter of this figure. Dimensions are in feet. All angles are right angles.



- A. 90 ft B. 180 ft C. 150 ft D. 195 ft

39 Which is the perimeter of this figure? Dimensions are in yards. Use 3.14 for π .



Perimeter $P = 12 + 12.37 + 9 + \text{semicircumference}$

$$P(\text{circle}) = 2\pi r = 2(3.14)(6 \text{ yd}) = 37.68 \text{ yd}$$

circumference

$$\downarrow$$

$$\frac{1}{2}(37.68 \text{ yd})$$

$$= 18.84 \text{ yd}$$

- A. 45.37 yd B. 71.05 yd C. 52.21 yd D. 64.21 yd

$$P = 12 \text{ yd} + 12.37 \text{ yd} + 9 \text{ yd} + 18.84 \text{ yd} = 52.21 \text{ yd}$$

40 A wooden fence is to be built around a 32- by 44-meter lot. How many meters of fencing will be needed? If the wood for the fence costs \$39.00 per meter, what will the wood for the fence cost?

- A. 1408 m; \$5928.00 B. 1408 m; \$54,912.00
C. 152 m; \$54,912.00 D. 152 m; \$5928.00

$$P(\text{rectangle}) = 2L + 2W$$

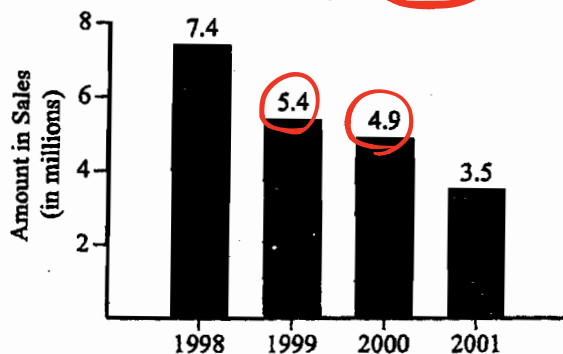
$$= 2(32 \text{ m}) + 2(44 \text{ m})$$

$$= 64 \text{ m} + 88 \text{ m}$$

$$= 152 \text{ m}$$

$$152 \text{ m} \times \frac{39 \$}{\text{m}} = 5928 \$$$

41 The graph shows the amount reported in sales for a software company over a four year period. Find the percent of decrease in sales from 1999 to 2000.



$$\text{change} = \text{new} - \text{old} = 4.9 \text{ mil} - 5.4 \text{ mil}$$

$$= -0.5 \text{ mil}$$

$$\text{percent change} = \frac{\text{change}}{\text{old}} = \frac{-0.5 \text{ mil}}{5.4 \text{ mil}} = -0.093$$

$$= -9.3\%$$

- A. 110.2% B. 10.2% C. 90.7% D. 9.3%

$$\text{Percent decrease} = 9.3\%$$

42 The sales of Kids sneakers rose from \$3 million to \$3.7 million. Find the percent increase to the nearest whole percent.

- A. 2.5% B. 25% C. 2.3% D. 23%

43 An investor received a dividend of \$43.95, which was 0.5% of the value of the investment. What was the value of the investment?

- a. \$87.90
c. \$8790.00

- b. \$219.75
d. \$2197.50

$$\frac{\$43.95}{x} = \frac{0.5}{100}$$

$$0.5x = 4395$$

$$x = 8790$$

44 If you answered 14 questions correctly on a 20-question exam, what percent of the questions did you answer correctly?

- a. 28%
c. 65%

- b. 43%
d. 70%

45 A study finds that 67% of students prefer internet resources to textbooks. Based on this survey, out of 200 students, how many prefer internet resources to textbooks?

- a. 134
c. 66

- b. 67
d. 33

what is 67% of 200?

$$x = 67/100 \times 200$$
$$= 134$$

46 Theresa made 35 of 40 free throws at basketball practice. Which percent did she make?

- A. 12.5% B. 46.7% C. 87.5% D. 5%

47 Margarette correctly answered 36 questions on a English test. She received a score of 90%. How many questions were on the test?

- A. 50 B. 45 C. 47 D. 40

48 Which shows 50% as a decimal?

- A. 5 B. 0.5 C. 0.05 D. 0.005

$$50\% = 0.50$$

49 Which shows 0.96 as a percent?

- A. 0.96% B. 9.6% C. 96% D. 960%

$$0.96 = 96\%$$

50 Which shows $\frac{1}{5}$ as a percent?

- A. 0.5% B. 0.2% C. 20% D. 5%

$$\frac{1}{5} = 0.2$$
$$= 20\%$$

51 Which is 4% written as a fraction?

- A. 25 B. $\frac{1}{25}$ C. 4 D. $\frac{2}{5}$

$$4\% = \frac{4}{100}$$
$$= \frac{1}{25}$$

52 An astronaut who weighs 175 pounds on Earth would weigh 45 pounds on the Theta Space Station. If a piece of equipment weighed 2100 pounds on Earth, what would it weigh on the Theta Space Station?

- A. 585 lb B. 552 lb C. 540 lb D. 594 lb

	earth		space station
astronaut	175 lb	=	45 lbs
equipment	2100 lb	=	x

$$175x = 94500$$

$$x = 540$$

53 What is the solution to the proportion $\frac{x}{14} = \frac{6}{5}$?

- a. $x = 2.1$
c. $x = 11.7$

- b. $x = 5.9$
d. $x = 16.8$

54 The ratio of cars to people in New Zealand is 350 to 1000. Compare as a ratio in simplest form.

A. $\frac{7}{10}$

B. $\frac{350}{1000}$

C. $\frac{7}{40}$

D. $\frac{7}{20}$

$$\frac{350}{1000} = \frac{35}{100} = \frac{7}{20}$$

55 Find the ratio of 2 hours to 20 minutes.

A. $\frac{10}{1}$

B. $\frac{1}{6}$

C. $\frac{1}{10}$

D. $\frac{6}{1}$

"6 to 1"

$$\frac{2 \text{ hr}}{20 \text{ min}} = \frac{2 \text{ hr}}{20 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} = \frac{6}{1}$$

56 Over the course of two hockey seasons, a star hockey player scored 45 goals while playing in 77 games. Which of the following expresses his scoring rate as a unit rate rounded to the thousandths place?

A. 0.316 goals per game

B. 0.416 goals per game

C. 0.584 goals per game

D. 0.484 goals per game

57 Patricia paid \$315 for 3 nights at a hotel. What was the nightly rate for her room?

- A. \$945 per night B. \$105 per night C. \$210 per night D. \$53 per night

58 A writer was paid \$6000 for a 2000-word article. Find the unit rate.

A. \$3.00 per word

B. \$3.33 per word

C. \$30.00 per word

D. \$0.33 per word

$$\frac{6000 \$}{2000 \text{ words}} = 3 \$/\text{word}$$

59 A teacher earns \$620 for working a 40-hour week. What is the teacher's hourly rate of pay?

- a. \$12.40 per hour
c. \$16.00 per hour

- b. \$15.50 per hour
d. \$20.25 per hour

60 Which is the most economical purchase?

- a. 10 ounces of orange juice for \$1.29
c. 48 ounces of orange juice for \$2.25

- b. 22 ounces of orange juice for \$1.99
d. 64 ounces of orange juice for \$3.29

61 Bob wants to find the best buy on laundry soap. Brand A costs \$6.02 for 40 ounces. He has a coupon for \$0.50 off the regular price of Brand B, which costs \$7.22 for 48 ounces. Brand C costs \$5.13 for 32 ounces. Which of these is the best buy?

- A. Brand B B. Brand B and Brand A cost the same per ounce
C. Brand A D. Brand C

62 Which is $V = \frac{1}{3}s^2h$ solved for h ?

a. $h = \frac{1}{3}s^2V$

c. $h = \frac{3V}{s^2}$

b. $h = \frac{V}{3s^2}$

d. $h = 3Vs^2$

Given $A = \frac{1}{2}h(b+c)$

Multiply 2 $2A = h(b+c)$

Divide h $\frac{2A}{h} = b+c$

~~Subtract c $\frac{2A}{h} - c = b$~~

63 Solve the equation $A = \frac{1}{2}h(b+c)$ for c .

A. $c = \frac{2}{A}h+b$

B. $c = \frac{2}{h}A - b$

C. $c = \frac{A}{b+c}$

D. $c = \frac{h}{2}A - c$

Subtract b $\frac{2A}{h} - b = c$

64 Starlight Tree Farm sells Douglas firs and noble firs. One December they sold 179 more Douglas firs than noble firs. The total number of trees sold was 499. Which equation could be used to solve for n , the number of noble fir trees sold?

A. $2n + 179 = 499$

B. $2n - 179 = 499$

C. $n - 179 = 499$

D. $n + 179 = 499$

Douglas firs = $n + 179$

total = # Douglas firs + n

$499 = (n + 179) + n$

$499 = n + 179 + n$

$499 = 2n + 179$

65 The formula $p = \frac{1}{20}s + 200$ is used to calculate a shoe salesperson's weekly earnings. In the formula, p represents the total earnings for the week and s represents the total weekly shoe sales. Suppose the employee sold \$1800 worth of shoes in one week. Find the salesperson's weekly earnings.

66 The charge for mailing a fourth-class package through the U.S. Postal Service is $C = 0.08x + 2.58$

where C is the charge in dollars and x is the weight of the package in pounds.

a. Find the charge to mail a package that weighs 9 pounds.

b. How many pounds can be mailed for \$3.54?

A. a. \$3.30

B. a. \$0.56

C. a. \$3.09

D. a. \$3.30

b. 12 lb

b. 14 lb

b. 11 lb

b. 13 lb